FLORENCE COPPER PROJECT
BIOLOGICAL EVALUATION
UPDATE

Prepared for:

FLORENCE COPPER

Florence Copper Inc.
1575 W. Hunt Highway, Florence, AZ USA 85132

Project Number: 1705.04

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WestLand Resources

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1. INTRODUCTION

Florence Copper Inc. (Florence Copper) contracted WestLand Resources, Inc. (WestLand), to prepare a Biological Evaluation (BE) in support of the expansion of an existing in-situ copper mining facility (the Project) located on approximately 1,342 acres (the Project Area) within the Town of Florence, Pinal County, Arizona, in portions of Sections 26-28 and 33-35, Township 4 South, Range 9 East, of the Gila and Salt River Baseline and Meridian (**Figure 1**). Approximately 160 acres of the Project Area is State Trust land managed by the Arizona State Land Department, the rest is privately held by Florence Copper. The Project Area is approximately 2 miles northwest of the Florence business district. Situated in the Middle Gila River valley, the Project Area is bounded on the north by Hunt Highway and on the south by the Gila River (**Figure 2**).

This BE has been prepared to describe the physical and biological features of the Project Area and to identify the potential for occurrence within the Project Area of Special-status Species: species designated by the U.S. Fish & Wildlife Service (USFWS) as Endangered or Threatened under the Endangered Species Act (ESA), or are proposed or candidate for ESA listing. The presence of proposed or designated critical habitat in the Project Area for federally listed species and species proposed for listing by the USFWS has also been evaluated. No species-specific surveys were conducted as part of this effort.

This BE, first issued in October 2019, has been updated to include the Sonoran desert tortoise (*Gopherus morafkai*). In a settlement agreement issued on July 31, 2020, between the USFWS and plaintiffs WildEarth Guardians and Western Watersheds Project, the Arizona District Court ordered the USFWS to place the Sonoran desert tortoise back on the list of ESA candidate species and to publish a new 12-month finding for the species within 18 months (District Court for the District of Arizona 2020).

The following report documents WestLand's conclusion that no species with ESA protection or any critical habitat will be affected by the Project. The Sonoran desert tortoise may occur in the Project Area, but, if present, will likely only occur transiently. However, as a candidate for listing, the Sonoran desert tortoise currently has no protections under the ESA. Regardless, this document includes measures Florence Copper has implemented for the protection of the species.

2. PROJECT OVERVIEW

Florence Copper currently operates a scaled-down version of the ultimate Project. Copper recovery is accomplished by injecting a low pH solution into a highly fractured subsurface bedrock that is rich in copper minerals and pumping the solution to the surface for processing at on-site solution extraction and electro-winning (SX/EW) facilities (the Project). No open pit, waste rock piles, or tailings facilities are associated with the Project. Many Project facilities have been constructed on agricultural fields, with some facilities surrounded by lands supporting a native vegetation community.

Proposed facilities to allow Project expansion will be located primarily on current agricultural fields, with some facilities to be constructed outside of the agricultural fields (**Figure 3**).

3. METHODS

A screening analysis was conducted to determine the potential for Special-status Species to occur within the Project Area, and to determine if designated or proposed critical habitat is located within the Project Area or nearby vicinity. The screening analysis is followed by more detailed discussion for any species for which it is determined to be warranted. The methods used to develop the screening analysis consisted of species identification, habitat assessment, and evaluation of the potential for occurrence. These methods are described in the following sections.

Special-status Species Identification

WestLand obtained a list of Special-status Species to consider for the Project Area on December 17, 2020 using the USFWS Information, Planning, and Conservation (IPaC) System (**Appendix A**). Any critical habitat in the Project Area vicinity is included in USFWS IPaC reports. WestLand also accessed the Arizona Game and Fish Department (AGFD) Heritage Database Management System (HDMS) Online Environmental Review Tool to obtain a list of species occurrence records within the Project Area vicinity. The bald eagle (*Haliaeetus leucocephalus*) and golden eagle (*Aquila chrysaetos*) would be included in the screening analysis if the range model used for the HDMS report predicted the potential presence of those two species, because the IPaC report only addresses species with ESA designations.

Habitat Assessment

WestLand reviewed Brown and Lowe (1980) to identify the biotic community(ies) in which the Project Area occurs. Vegetation and habitat features documented during the site visit are described in **Section 3.1**.

Site Visit

WestLand reviewed the natural history, habitat use, and known range and distribution of the Special-status Species identified on the USFWS IPaC list prior to a site visit to the Project Area, conducted on September 20, 2019. WestLand biologists noted and photo-documented site conditions during the visit, including vegetative communities, the presence of surface water, and any other resources are known to be associated with areas occupied by the Special-status Species.

Evaluation of Potential Occurrence

A screening analysis was conducted to evaluate the potential for Special-status Species to occur within the Project Area, and to identify the presence of proposed or designated critical habitat in or near the Project Area. The potential for Special-status Species to be present and to use habitats within the Project Area was determined based on comparing species information with habitats present in the Project Area and reviewing records of occurrence in published and grey literature. AGFD HDMS

Online Environmental Review Tool was accessed in 2011 and 2019 to obtain a list of species occurrence records within the Project Area vicinity, which was defined in the 2011 HDMS report as a 3-mile radius and in the 2019 HDMS report as a 5-mile radius (**Appendix B**). WestLand has conducted site visits for biological evaluation purposes in 2011 and on September 20, 2019.

The criteria used to determine the potential of occurrence for the species included in this screening analysis are defined as follows:

- **Present** – The species has been observed in the Project Area during site visits or has been documented in the Project Area based on records from recent, reliable sources (e.g., AGFD, USFWS, museum records), and habitats required by the species are known to be currently present.
- **Possible** – The species has not been documented in the Project Area, but the known, current geographic and elevational range of the species includes the Project Area and habitat required by the species appear to be present in the Project Area.
- **Unlikely** – Generally, the known, current geographic range of the species does not include the Project Area, but the Project Area may be within the dispersal range of the species. The required habitat characteristics of the species may be present in the Project Area; however, the potential for occurrence of these species is discountable and detailed discussion was not deemed warranted.
- **None** – The Project Area is outside the documented geographic and/or elevational range of the species and the habitat required by the species is not present.

Species that are determined to be *present* or *possible to occur* within the Project Area are evaluated in further detail for potential impacts, following the screening analysis.

4. PHYSIOGRAPHIC SETTING AND BIOTIC COMMUNITY OVERVIEW

The Project Area lies near the eastern edge of the Basin and Range physiographic province, not far from the Central Highlands Transition Zone province (Nations and Stump 1996). The area is characterized by a broad alluvial plain derived from Transition Zone mountainous regions in the easterly directions. Lower extensions of Transition Zone mountainous areas reach nearly to the Project Area from the northeast. The Gila River is the main drainage in the region, bordering the Project Area on the south as an ephemeral channel up to 0.5 mile wide. The Ashurst-Hayden Diversion Dam on the Gila River is approximately 11 miles upstream from the Project Area; the Gila River is ephemeral below this diversion dam. Elevations within the Project Area range from approximately 1,450 feet (ft) above mean sea level (amsl) to 1,490 ft amsl, with a low-gradient north to south slope.

Project facilities in the northern portion of the Project Area are scattered throughout the flat landscape in which vegetation is dominated by creosotebush (*Larrea tridentata*), with the North Side Canal separating the north from active and fallow agricultural fields covering the southern approximately two-thirds of the site. Land uses adjacent to the Project Area's agricultural fields include more agricultural fields on the west; a gravel operation on the east; and the Gila River, including a

gravel operation, on the south. Adjacent to the northern portion of the Project Area are open lands (**Figure 2**). The northern portion of the Project Area, while supporting native vegetation, has been modified to a large extent by human activity. Existing disturbance includes an extensive network of dirt roads, earthen berms, and modified channels to control surface water discharges to agricultural lands, and numerous buildings and other workings associated with agriculture, past copper mining, and in-situ copper recovery operations. In addition to the onsite features affecting surface water flows within the Project Area, off-site features such as the Hunt Highway, the Southern Pacific railroad, cattle tanks, and to a lesser extent the Central Arizona Project canal reduce storm water flows that reach the Project Area. Representative photos of the Project Area are included in **Appendix C**.

Surficial geology within the Project Area includes three units (Huckleberry 1993). There are two River Valley/Basin Floor units and one Mountain Upland/Piedmont surface. The two River Valley/Basin Floor units cover most of the Project Area. The agricultural fields mainly occupy the youngest (less than 8,000-year-old) alluvial terrace (Adamsville Terrace) along the Gila River. The northern portion of the Project Area, immediately upgradient from the Adamsville Terrace, is degraded Florence Terrace, a heavily eroded, gradually sloped, depositional surface that covers a wide range of ages under one million years old. The Florence Terrace includes low, rounded interfluves, stream channels that are moderately incised, and desert pavement that ranges from moderately developed to absent. Desert pavement was not noted to be well developed within the Project Area. There is also great variation in soil development on the Florence Terrace. The Mountain Upland/Piedmont surface includes three modern ephemeral stream channels that dissect the Project Area, formed by draining the piedmont areas located to the north.

The nearest prominent geological feature, other than the Gila River, is Poston Butte, a small basalt hill (Ferguson and Skotnicki 1996) reaching 1,748 ft in elevation, directly across the Hunt Highway from the east end of the Project Area. This hill is at the toe of a broad area of slopes that climb in elevation generally to the north, but do not attain the elevation of Poston Butte until several miles to the northeast.

The Project Area is within the Lower Colorado River subdivision of the Sonoran Desertscrub biotic community (Brown and Lowe 1980). Three distinct plant communities were identified during the site visit: creosotebush, xeroriparian, and agricultural.

WestLand previously visited the Project Area to conduct a BE in 2011, and when revisited on September 20, 2019 for this current evaluation, conditions appeared to be mostly unchanged. The northern section of the Project Area is dominated by creosotebush in the upland areas, where plant species diversity is low. Other species represented include mesquite (*Prosopis velutina*), foothill palo verde (*Parkinsonia microphylla*), triangle-leaf bursage (*Ambrosia deltoidea),* catclaw acacia (*Acacia greggii*), saguaro (*Carnegiea gigantea*), barrel cactus (*Ferocactus wislizeni*), and cane cholla (*Cylindropuntia spinosior*). The cacti species occur in very low numbers and forbs and grasses are sparsely distributed.

Velvet mesquite, blue palo verde (*Parkinsonia florida*), and various shrubs, forbs, and grasses are the main components of the xeroriparian community found along the ephemeral drainages and in areas of ponding on the upstream side of canals and other man-made features that slow down or impound surface water within the Project Area. Vegetation patterns within the ponding areas suggests that inundation is infrequent and of brief duration. Xeroriparian habitats are primarily found along two washes on the west end of the Project Area, one channelized wash on the east side, and along several berms and the North Side Canal. Vegetation in these areas is generally not well developed for xeroriparian systems. In addition to the mesquite and blue palo verde in those areas, other species include brittlebush (*Encelia farinosa*), desert broom (*Baccharis sarothroides*), burroweed (*Isocoma tenuisecta*), wolfberry (*Lycium* sp.), and occasional salt cedar (*Tamarix* spp.) Dense mats of mostly dried forbs and grasses were also found, especially in the ponding areas.

5. SPECIAL-STATUS SPECIES EVALUATION

Two threatened species, the yellow-billed cuckoo (*Coccyzus americanus*) and the northern Mexican gartersnake (*Thamnophis eques megalops*), and the candidate species Sonoran desert tortoise, are the only Special-status Species on the USFWS IPaC list that was run officially for the Project Area on December 17, 2020 (**Appendix A**). The AGFD HDMS database lists the bald and golden eagles as having the modeled potential to be found in the vicinity of the Project Area. The AGFD HDMS database has at least one record of Sonoran desert tortoise within 3 miles of the Project Area, but no records of the other four species (**Appendix B**). A screening analysis for these five species (**Table 1**) includes the ESA status and the documented geographic range, habitat requirements, and potential for their occurrence within the Project Area. Only the Sonoran desert tortoise is considered *Present* or *Possible to Occur* and warrants more detailed discussion (see **Section 6**).

Table 1. Special-status Species and Their Potential to Occur within the Project Area

Species Name and ESA Status*	Documented Geographic Range and Habitat Preference(s)	Potential to Occur within Project Area
Golden eagle (*Aquila chrysaetos*) ESA STATUS: None Protected under Bald and Golden Eagle Protection Act	In Arizona, found in suitable habitat throughout the state (Corman and Wise-Gervais 2005) but tend to vacate low desert areas during the summer (AGFD 2002). Inhabit pinyon pine-juniper woodlands, Sonoran desertscrub, Madrean evergreen oak woodlands, semiarid grasslands, chaparral, and landscapes dominated by big sagebrush. Construct nests in areas with little to no human activity, in tall trees, cliffs, canyons, or rock ledges (Corman and Wise-Gervais 2005). Golden eagles are known to forage within 4.4 miles of the nest (Tesky 1994), generally in open habitats where prey is available (Katzner et al. 2020). In Arizona, occur between 1,300 and 9,000 ft in elevation (Corman and Wise-Gervais 2005).	**Unlikely.** Although it is within the geographical range of the species, there is no suitable habitat within the Project Area. There are no HDMS records within 5 miles of the Project Area (**Appendix B**) and this species was not detected by breeding bird surveys of USGS quadrangles occupied by the Project Area (AGFD 2019, Corman and Wise-Gervais 2005). Additionally, the nearest eBird (2019) report of this species is approximately 15 miles from the Project Area.
Yellow-billed cuckoo (*Coccyzus americanus*) ESA STATUS: Threatened (USFWS 2014c) CRITICAL HABITAT: Proposed (USFWS 2014b)	Occur throughout Arizona, most commonly in lowland riparian woodlands where Fremont cottonwood, willow, velvet ash, Arizona walnut, mesquite, and tamarisk are dominant, but also use mesquite bosques and smaller stands of isolated cottonwoods mixed with mesquite. Dense understory foliage is an important factor for nesting (AGFD 2011b, Halterman et al. 2015, USFWS 2014b), and areas of upland-associated vegetation along drainages dominated by oaks and junipers (WestLand 2013). Not reported nesting in isolated patches 1-2 acres (0.4-0.8 hectares) or narrow, linear riparian habitats that are less than 33-66 ft (10-20 m) wide (Halterman et al. 2015).	**None**. No suitable riparian habitat for the species is present within the Project Area. There are no areas of native forest that line rivers or streams. Nesting and foraging resources are not present. The proposed critical habitat for the species is not present within the Project Area (USFWS 2019).

Table 1. Special-status Species and Their Potential to Occur within the Project Area

Species Name and ESA Status*	Documented Geographic Range and Habitat Preference(s)	Potential to Occur within Project Area
Bald eagle (*Haliaeetus leucocephalus*) ESA STATUS: None Protected under Bald and Golden Eagle Protection Act	Breeding is concentrated in coastal areas, along rivers, lakes or reservoirs. Typically breed in forested areas with edge habitat within 1.3 miles of aquatic habitats suitable for foraging. Prefer areas of shallow water and shorelines for fishing and hunting a wide variety of waterfowl, and small aquatic and terrestrial mammals. Fish are preferred prey, but carrion is used extensively whenever encountered. Nest away from human disturbance in large trees and rarely on cliff ledges or on the ground when trees are absent. Winter primarily in coastal areas or along major river systems with adequate prey availability and large trees for perching **(Buehler 2020)**. In Arizona, found between 460 and 7,930 ft in elevation (AGFD 2011a).	**Unlikely.** Although it is within the geographical range of the species, there is no suitable habitat within the Project Area. There are no HDMS records within 5 miles of the Project Area (**Appendix B**) and this species was not detected by breeding bird surveys of USGS quadrangles occupied by the Project Area (AGFD 2019, Corman and Wise-Gervais 2005). Additionally, the nearest eBird (2019) report of this species is approximately 10 miles from the Project Area.
Northern Mexican gartersnake (*Thamnophis eques megalops*) ESA STATUS: Threatened (USFWS 2013b) CRITICAL HABITAT: Proposed (USFWS 2013a)	Inhabit densely vegetated habitats along perennial aquatic environments (e.g., streams, cienegas, and occasionally stock tanks), 3,000 to 5,000 ft elevation. Use terrestrial habitat with rocky areas and vegetation for dispersal, breeding, and thermoregulation. Known from the middle/upper Verde River drainage and middle/lower Tonto Creek in central Arizona, and Cienega Creek and isolated wetlands in southeast Arizona (AGFD 2012, USFWS 2014d). Only five populations are considered viable: (1) Page Springs and Bubbling Ponds State Fish Hatcheries along Oak Creek; (2) lower Tonto Creek; (3) upper Santa Cruz River in the San Rafael Valley; (4) Bill Williams River; and (5) upper and middle Verde River (USFWS 2014a). Expected to occur within 600 ft (183 m) of permanent water in lotic habitats during active season, up to 650 ft (198 m) from water during inactive periods (USFWS 2013b). Vulnerable to the effects of non-native species through competition and predation (USFWS 2013b). Riparian obligate (restricted to riparian areas when not engaged in dispersal behavior) found chiefly in: (1) Source-area wetlands (e.g., cienegas [mid-elevation wetlands with highly organic, basic or alkaline soils] or stock tanks); (2) large river riparian woodlands and forests; and (3) streamside gallery forests (well-developed broadleaf deciduous riparian forests with limited, if any, herbaceous ground cover or dense grass) (USFWS 2014d).	**None**. No suitable habitat is present within the Project Area. Vegetation is not dense and is absent in much of the Project Area. There are no cienegas, lowland river riparian forests or upland stream gallery forests within the Project Area. The proposed critical habitat is not present within the Project Area (USFWS 2019).

Table 1. Special-status Species and Their Potential to Occur within the Project Area

Species Name and ESA Status*	Documented Geographic Range and Habitat Preference(s)	Potential to Occur within Project Area
Sonoran desert tortoise (*Gopherus morafkai*) ESA STATUS: Candidate https://ecos.fws.gov/ecp/report/table/candidate-species.html (accessed January 8, 2021) CRITICAL HABITAT: Not applicable	Found on rocky slopes and bajadas in the Mohave and Sonoran desertscrub biotic communities. Burrow in loose soil, below rocks and boulders, or find shelter under vegetation and in caliche caves. Most commonly found in association with paloverde and mixed cacti. Forage on annual and perennial grasses, forbs, succulents, trees and shrubs, and woody vines (AGFD 2015, USFWS 2015). In the contact zone between the species (the Black Mountains of west-central Arizona), *G. morafkai* generally is found in foothills, on hillside slopes and more mountainous terrain than *G. agassizii*, which is typically found on alluvial fans and valley bottoms (Edwards et al. 2015). Occurs in Arizona, U.S. and Sonora, Mexico (Edwards et al. 2015, Murphy et al. 2011) from 510–5,300 ft elevation (AGFD 2015). In Arizona, found south and east of the Colorado river in all counties except Apache, Coconino, Greenlee and Navajo (AGFD 2015, USFWS 2015). The southern Black Mountains are a contact zone between the Sonoran and Mojave tortoise, although the Mojave lineage predominates in the area (Edwards et al. 2015, USFWS 2015).	**Possible.** Known to occur within 3 miles of the Project Area. The Project Area has no rocky areas and thus provides poor sheltering opportunities for this species, although it is possible tortoise could dig soil burrows in the Project Area. The marginal quality of the Project Area as tortoise habitat is supported by the fact that there are no known reports of the species occurring on the Project Area (J. Saran, pers. comm.). However, given that tortoise have been detected within 3 miles of the Project Area and there is suitable hillside habitat near the Project Area, it is possible that this species may occur in the Project Area during dispersal or home range movements. Thus, this species would most likely would, if present, occur only on a transient basis.

6. SONORAN DESERT TORTOISE

Sonoran desert tortoises may occur in the Project Area, although the Project Effects to this species are expected to be negligible. There is at least one record of a Sonoran desert tortoise within three miles of the Project Area, according to the AGFD HDMS (**Appendix B**). However, while specific locations are not provided, based on topography surrounding the Project Area, it is most likely that the records are from north of the Project Area.

Florence Copper staff reports no records of tortoise encounters within the Project Area (J. Saran, pers. comm.) and WestLand did not detect any tortoise sign during site visits for biological investigations in 2011 and 2019. Habitat in the Project Area is only marginally suitable for tortoise. Specifically, the Project Area does not contain boulder slopes or other boulder areas or significant vegetative cover that is typically used by Sonoran desert tortoises for sheltering habitat (Averill-Murray et al. 2002, Van Devender 2002), although tortoises could dig soil burrows in the Project Area. The lack of quality burrowing habitat is important, because Sonoran desert tortoises require adequate shelter to escape extreme winter and summer temperatures (Averill-Murray et al. 2002, Van Devender 2002). Tortoises primarily find cover under boulders, often modifying the site by digging, and less often dig burrows under vegetation or in open soil (Averill-Murray et al. 2002, USFWS 2015, Van Devender 2002). However, suitable rock slopes are found immediately across the Hunt Highway north of the Project Area, and Sonoran desert tortoises will occasionally travel long distances from their slopes of origin (USFWS 2015). For this reason, tortoises may traverse the Project Area, although such movements are expected to be infrequent based on the marginal quality of habitat, lack of records of tortoise in the Project Area, and because the Project Area is separated from suitable tortoise habitat by a busy highway that may interfere with tortoise movement behavior.

Given the likelihood that Sonoran desert tortoises are rare, transient visitors to the Project Area, Project activities are unlikely to harm any tortoises. Moreover, Florence Copper has implemented a Wildlife Monitoring Plan (**Appendix D**) that includes following the 2007 AGFD recommended *Guidelines for Handling Sonoran Desert Tortoises Encountered on Development Projects* and fencing around the perimeter of their pond to prevent tortoises and other burrowing animals from gaining entry to the impoundment area. Florence Copper will update the Wildlife Monitoring Plan to incorporate the 2014 version of the AGFD Sonoran desert tortoise handling guidelines (**Appendix D**).

7. CONCLUSIONS

No species with ESA or Bald and Golden Eagle Protection Act protections are expected to occur on or near the Project Area or to be affected by proposed Project activities. The only Special-status Species that may occur in the Project Area is the Sonoran desert tortoise. The Project Area is not within any designated or proposed critical habitat.

The Sonoran desert tortoise may occur in the Project Area, although as a candidate species, it does not receive protection under the ESA. Habitat within the Project Area is not well suited to inhabitation by the species, but the Project Area is in close enough proximity to suitable habitat that individuals could occasionally wander onto the site, most likely on a transient basis. However, as noted above in **Section 6**, Florence Copper has implemented a Wildlife Monitoring Plan that includes measures for Sonoran desert tortoises protection that will reduce the potential for the Project to result in harm to any Sonoran desert tortoises.

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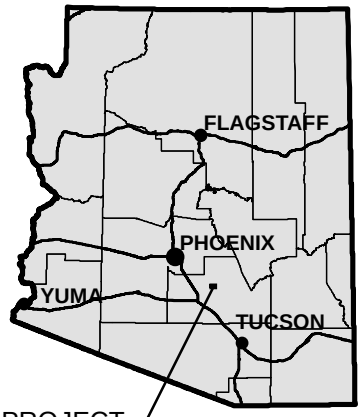
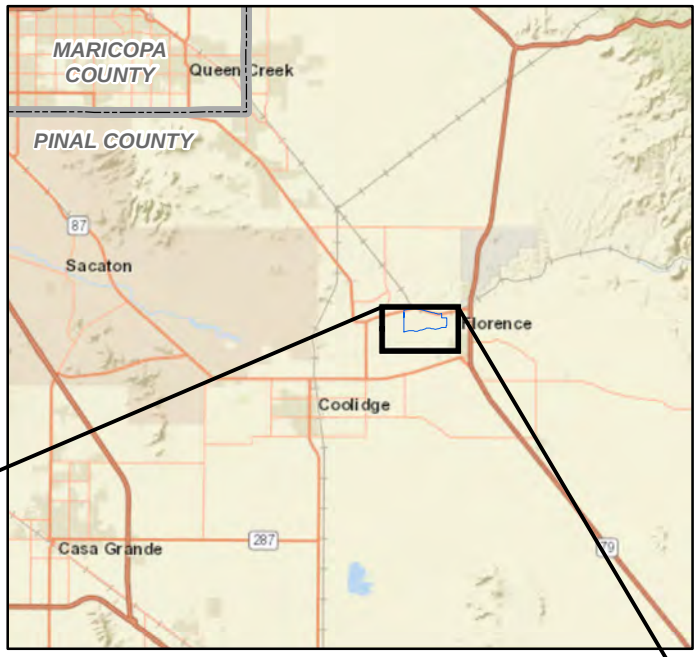
FIGURES

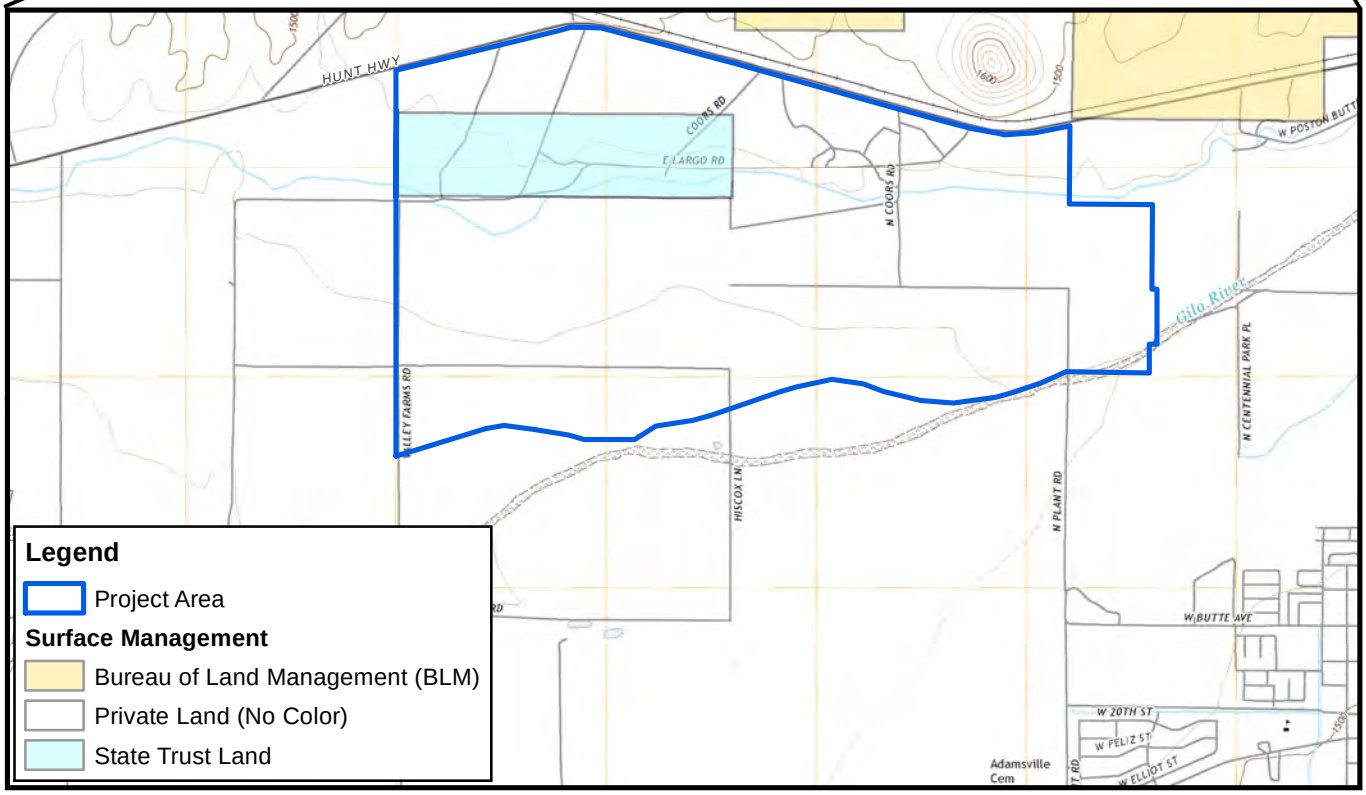
ARIZONA



PROJECT VICINITY



Approximate Scale 1 Inch = 10 Miles



T4S, R9E, Portions of Sections 26-28, and 33-35,
Pinal County, Arizona,
Florence USGS 7.5' Quadrangle (2018)
Surface Management: BLM 2019, WRI modified 2019
Image Source: ArcGIS Online, World Street Map

FLORENCE COPPER INC.

Florence Copper Project
Biological Evaluation

VICINITY MAP
Figure 1

WestLand Resources

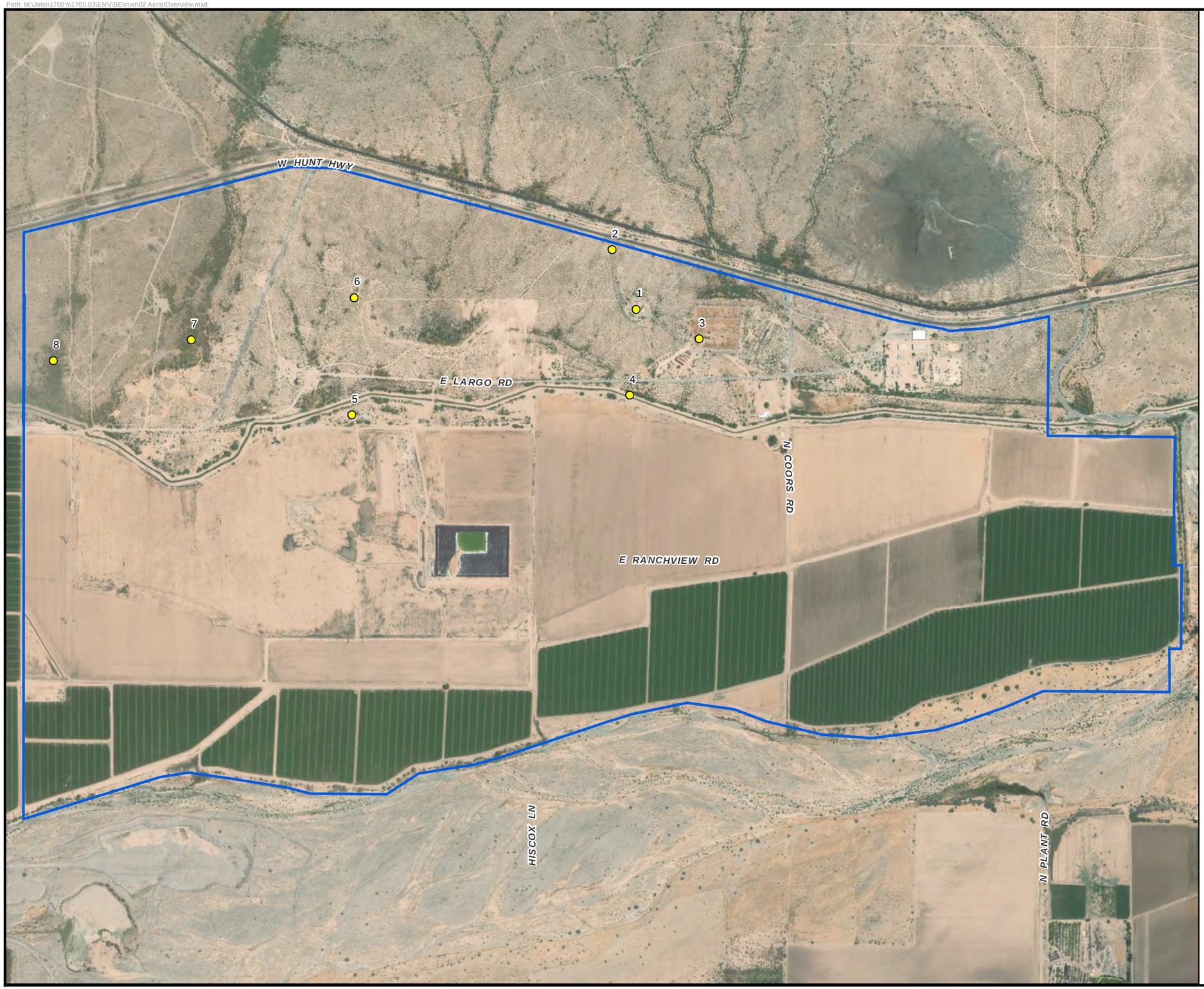
N

0 1,500 3,000 Feet

0 500 1,000 Meters

Path: M:\Jobs\1700's\1705.03\ENV\BE\mxd\02 AerialOverview.mxd

Date: 10/1/2019 User: evinson



T4S, R9E, Portions of Sections 26-28, and 33-35,
Pinal County, Arizona,
Image Source: ArcGIS Online, World Imagery 04/20/2017

Legend

- Photo Point
- Project Area

N

0 500 1,000 Feet

0 150 300 Meters

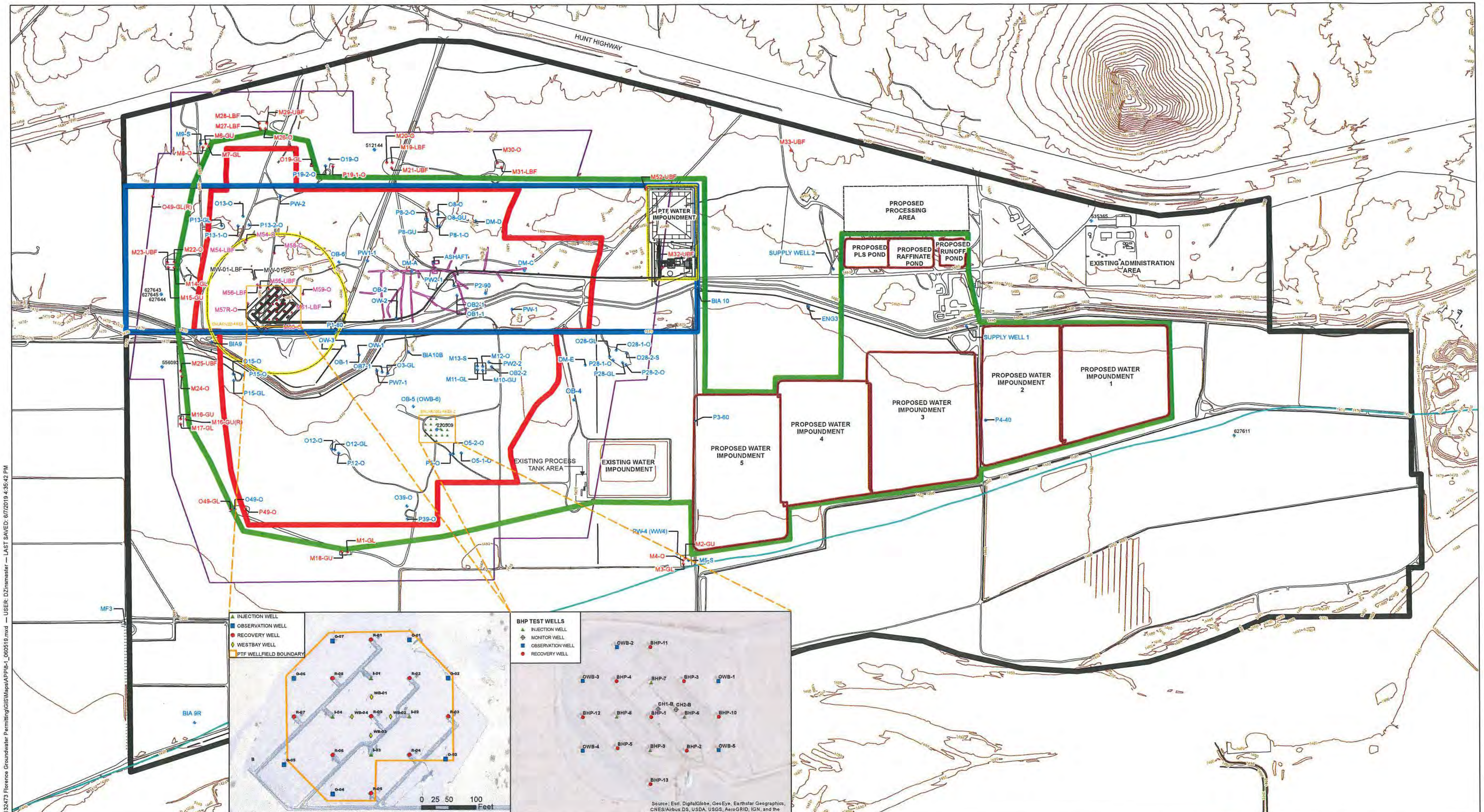
WestLand Resources

FLORENCE COPPER INC.

Florence Copper Project
Biological Evaluation

AERIAL OVERVIEW

Figure 2



HUNT HIGHWAY
M28-LBF
M27-LBF
M29-UBF
M26-O
M9-S
M6-GU
M8-O
M7-GL
O19-GL
O19-O
P19-2-O
P19-1-O
512144
M20-O
M19-LBF
M21-UBF
M30-O
M31-LBF
M52-UBF
PTF WATER IMPOUNDMENT
M32-UBF
M33-UBF
O49-GL(R)
O13-O
PW-2
P13-GL
P13-2-O
P13-1-O
M54-O
M54-LBF
M58-O
M23-UBF
M22-O
MW-01-LBF
MW-01-O
M55-UBF
M14-GL
M15-GU
627643
627645
627644
M56-LBF
M59-O
M57R-O
M61-LBF
M60-O
P1-60
OB-6
PW1-1
P8-2-O
P8-GU
O8-O
O8-GU
P8-1-O
DM-D
DM-A
ASHAFT
DM-C
PW2-1
P2-90
OB-2
OW-2
OB2-1
OB1-1
PW-1
BIA9
BIA 10
ENG3
SUPPLY WELL 2
SUPPLY WELL 1
556093
M25-UBF
O15-O
P15-O
P15-GL
M24-O
OW-3
OW-1
OB-1
OB7-1
O3-GL
PW7-1
BIA10B
M13-S
M12-O
PW2-2
OB2-2
M11-GL
M10-GU
DM-E
O28-GL
O28-1-O
O28-2-S
P28-1-O
P28-GL
P28-2-O
OB-4
OB-5 (OWB-6)
220509
M16-GU
M16-GU(R)
M17-GL
O12-O
O12-GL
P12-O
O5-2-O
O5-1-O
P5-O
EXISTING PROCESS TANK AREA
EXISTING WATER IMPOUNDMENT
O49-GL
O49-O
P49-O
O39-O
P39-O
M1-GL
M18-GU
PW-4 (WW4)
M2-GU
M4-O
M5-S
M3-GL
MF3
BIA 9R
P3-60
P4-40
627611
535365
PROPOSED PROCESSING AREA
PROPOSED PLS POND
PROPOSED RAFFINATE POND
PROPOSED RUNOFF POND
EXISTING ADMINISTRATION AREA
PROPOSED WATER IMPOUNDMENT 1
PROPOSED WATER IMPOUNDMENT 2
PROPOSED WATER IMPOUNDMENT 3
PROPOSED WATER IMPOUNDMENT 4
PROPOSED WATER IMPOUNDMENT 5
INJECTION WELL
OBSERVATION WELL
RECOVERY WELL
WESTBAY WELL
PTF WELLFIELD BOUNDARY
O-07
R-01
O-01
O-06
R-08
I-01
R-02
O-02
WB-01
R-07
I-04
WB-04
R-09
WB-02
I-02
R-03
WB-03
R-06
I-03
R-04
O-03
O-05
O-04
R-05
0 25 50 100 Feet
BHP TEST WELLS
INJECTION WELL
MONITOR WELL
OBSERVATION WELL
RECOVERY WELL
OWB-2
BHP-11
OWB-3
BHP-4
BHP-7
BHP-3
OWB-1
CH1-B
CH2-B
BHP-12
BHP-8
BHP-1
BHP-6
BHP-10
OWB-4
BHP-5
BHP-9
BHP-2
OWB-5
BHP-13
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

GIS FILE PATH: G:\Projects\Florence Copper\132473 Florence Groundwater Permitting\GIS\Maps\APP\8-1_060519.mxd — USER: DZinsmaster — LAST SAVED: 6/7/2019 4:35:42 PM

LEGEND

- PROPOSED PMA BOUNDARY
- PROPERTY BOUNDARY
- STATE LAND LEASE
- ISCR WELL FIELD
- PTF PMA BOUNDARY
- AQUIFER EXEMPTION BOUNDARY
- PROPOSED WATER IMPOUNDMENT
- 100 YEAR FLOOD PLAIN
- UNDERGROUND WORKINGS
- BHP TEST WELL
- PTF WELLFIELD
- POINT OF COMPLIANCE WELL
- SUPPLEMENTAL MONITORING WELL
- OPERATIONAL WELL
- FORMATION TEST WELLS

NOTES

1. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE
2. TOPOGRAPHY DATA BY FLORENCE COPPER, OCTOBER 2010. 10-FOOT INTERVALS SHOWN.

N

0 200 400 600 800

SCALE IN FEET

HALEY ALDRICH

FLORENCE COPPER, INC.
FLORENCE, ARIZONA 85132

TOPOGRAPHY AND LOCATION OF PLANED ISCR FACILITY WITH WATER WELLS, MONITOR WELLS, AND TEST WELLS

FLORENCE COPPER

JUNE 2019

FIGURE 3

APPENDIX A

USFWS IPaC Query

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Arizona Ecological Services Field Office
9828 North 31st Ave
#c3
Phoenix, AZ 85051-2517
Phone: (602) 242-0210 Fax: (602) 242-2513
http://www.fws.gov/southwest/es/arizona/
http://www.fws.gov/southwest/es/EndangeredSpecies_Main.html

In Reply Refer To: December 17, 2020
Consultation Code: 02EAAZ00-2021-SLI-0303
Event Code: 02EAAZ00-2021-E-00811
Project Name: Florence Copper

Subject: List of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

The Fish and Wildlife Service (Service) is providing this list under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 et seq.). The list you have generated identifies threatened, endangered, proposed, and candidate species, and designated and proposed critical habitat, that may occur within one or more delineated United States Geological Survey 7.5 minute quadrangles with which your project polygon intersects. Each quadrangle covers, at minimum, 49 square miles. In some cases, a species does not currently occur within a quadrangle but occurs nearby and could be affected by a project. Please refer to the species information links found at:
http://www.fws.gov/southwest/es/arizona/Docs_Species.htm
http://www.fws.gov/southwest/es/arizona/Documents/MiscDocs/AZSpeciesReference.pdf .

The purpose of the Act is to provide a means whereby threatened and endangered species and the habitats upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 et seq.), Federal agencies are required to utilize their authorities to carry out programs for the conservation of Federal trust resources and to consult with us if their projects may affect federally listed species and/or designated critical habitat. A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, we recommend preparing a biological evaluation similar to a Biological Assessment to determine whether the project may

affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If the Federal action agency determines that listed species or critical habitat may be affected by a federally funded, permitted or authorized activity, the agency must consult with us pursuant to 50 CFR 402. Note that a "may affect" determination includes effects that may not be adverse and that may be beneficial, insignificant, or discountable. You should request consultation with us even if only one individual or habitat segment may be affected. The effects analysis should include the entire action area, which often extends well outside the project boundary or "footprint." For example, projects that involve streams and river systems should consider downstream effects. If the Federal action agency determines that the action may jeopardize a proposed species or adversely modify proposed critical habitat, the agency must enter into a section 7 conference. The agency may choose to confer with us on an action that may affect proposed species or critical habitat.
Candidate species are those for which there is sufficient information to support a proposal for listing. Although candidate species have no legal protection under the Act, we recommend considering them in the planning process in the event they become proposed or listed prior to project completion. More information on the regulations (50 CFR 402) and procedures for section 7 consultation, including the role of permit or license applicants, can be found in our Endangered Species Consultation Handbook at:
http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF.

We also advise you to consider species protected under the Migratory Bird Treaty Act (MBTA) (16 U.S.C. 703-712) and the Bald and Golden Eagle Protection Act (Eagle Act) (16 U.S.C. 668 et seq.). The MBTA prohibits the taking, killing, possession, transportation, and importation of migratory birds, their eggs, parts, and nests, except when authorized by the Service. The Eagle Act prohibits anyone, without a permit, from taking (including disturbing) eagles, and their parts, nests, or eggs. Currently 1026 species of birds are protected by the MBTA, including species such as the western burrowing owl (Athene cunicularia hypugea). Protected western burrowing owls are often found in urban areas and may use their nest/burrows year-round; destruction of the burrow may result in the unpermitted take of the owl or their eggs.

If a bald eagle (or golden eagle) nest occurs in or near the proposed project area, you should evaluate your project to determine whether it is likely to disturb or harm eagles. The National Bald Eagle Management Guidelines provide recommendations to minimize potential project impacts to bald eagles:
https://www.fws.gov/migratorybirds/pdf/management/
nationalbaldeaglenanagementguidelines.pdf
https://www.fws.gov/birds/management/managed-species/eagle-management.php.

The Division of Migratory Birds (505/248-7882) administers and issues permits under the MBTA and Eagle Act, while our office can provide guidance and Technical Assistance. For more information regarding the MBTA, BGEPA, and permitting processes, please visit the following: https://www.fws.gov/birds/policies-and-regulations/incidental-take.php. Guidance for minimizing impacts to migratory birds for communication tower projects (e.g. cellular, digital television, radio, and emergency broadcast) can be found at:

https://www.fws.gov/birds/bird-enthusiasts/threats-to-birds/collisions/communication-towers.php.

Activities that involve streams (including intermittent streams) and/or wetlands are regulated by the U.S. Army Corps of Engineers (Corps). We recommend that you contact the Corps to determine their interest in proposed projects in these areas. For activities within a National Wildlife Refuge, we recommend that you contact refuge staff for specific information about refuge resources.
If your action is on tribal land or has implications for off-reservation tribal interests, we encourage you to contact the tribe(s) and the Bureau of Indian Affairs (BIA) to discuss potential tribal concerns, and to invite any affected tribe and the BIA to participate in the section 7 consultation. In keeping with our tribal trust responsibility, we will notify tribes that may be affected by proposed actions when section 7 consultation is initiated.

We also recommend you seek additional information and coordinate your project with the Arizona Game and Fish Department. Information on known species detections, special status species, and Arizona species of greatest conservation need, such as the western burrowing owl and the Sonoran desert tortoise (Gopherus morafkai) can be found by using their Online Environmental Review Tool, administered through the Heritage Data Management System and Project Evaluation Program https://www.azgfd.com/Wildlife/HeritageFund/.

For additional communications regarding this project, please refer to the consultation Tracking Number in the header of this letter. We appreciate your concern for threatened and endangered species. If we may be of further assistance, please contact our following offices for projects in these areas:

Northern Arizona: Flagstaff Office 928/556-2001
Central Arizona: Phoenix office 602/242-0210
Southern Arizona: Tucson Office 520/670-6144

Sincerely,
/s/ Jeff Humphrey Field Supervisor

Attachment

Attachment(s):

- Official Species List

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Arizona Ecological Services Field Office
9828 North 31st Ave
#c3
Phoenix, AZ 85051-2517
(602) 242-0210

Project Summary

Consultation Code: 02EAAZ00-2021-SLI-0303

Event Code: 02EAAZ00-2021-E-00811

Project Name: Florence Copper

Project Type: MINING

Project Description: Updated list.

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/place/33.04762073617496N111.4199012111023W

Counties: Pinal, AZ

Endangered Species Act Species

There is a total of 3 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

---

1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Birds

NAME	STATUS
Yellow-billed Cuckoo *Coccyzus americanus* Population: Western U.S. DPS There is **proposed** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/3911	Threatened

Reptiles

NAME	STATUS
Northern Mexican Gartersnake *Thamnophis eques megalops* There is **proposed** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/7655	Threatened
Sonoran Desert Tortoise *Gopherus morafkai* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9289	Candidate

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

APPENDIX B

AGFD HDMS Query

Arizona Environmental Online Review Tool Report

Arizona Game and Fish Department Mission
To conserve Arizona's diverse wildlife resources and manage for safe, compatible outdoor recreation opportunities for current and future generations.

Project Name:
Florence Cooper

User Project Number:
1705.03

Project Description:
In-situ copper recovery with much of the disturbance on existing agricultural fields. Copper recovery will be accomplished by injecting a low pH solution into a highly fractured subsurface bedrock that is rich in copper minerals, and pumping the solution to the surface for processing at on-site solution extraction and electro-winning facilities. There will be no open pit, waste rock piles, or tailings facilities associated with the project.

Project Type:
Mining, Extraction Other minerals (copper, limestone, cinders, shale, salt), Other minerals (copper, limestone, cinders, shale, salt)

Contact Person:
Andrea Love

Organization:
Westland Resources, Inc.

On Behalf Of:
PRIVATE

Project ID:
HGIS-09763

Please review the entire report for project type and/or species recommendations for the location information entered. Please retain a copy for future reference.

Disclaimer:

1. This Environmental Review is based on the project study area that was entered. The report must be updated if the project study area, location, or the type of project changes.
2. This is a preliminary environmental screening tool. It is not a substitute for the potential knowledge gained by having a biologist conduct a field survey of the project area. This review is also not intended to replace environmental consultation (including federal consultation under the Endangered Species Act), land use permitting, or the Departments review of site-specific projects.
3. The Departments Heritage Data Management System (HDMS) data is not intended to include potential distribution of special status species. Arizona is large and diverse with plants, animals, and environmental conditions that are ever changing. Consequently, many areas may contain species that biologists do not know about or species previously noted in a particular area may no longer occur there. HDMS data contains information about species occurrences that have actually been reported to the Department. Not all of Arizona has been surveyed for special status species, and surveys that have been conducted have varied greatly in scope and intensity. Such surveys may reveal previously undocumented population of species of special concern.
4. HabiMap Arizona data, specifically Species of Greatest Conservation Need (SGCN) under our State Wildlife Action Plan (SWAP) and Species of Economic and Recreational Importance (SERI), represent potential species distribution models for the State of Arizona which are subject to ongoing change, modification and refinement. The status of a wildlife resource can change quickly, and the availability of new data will necessitate a refined assessment.

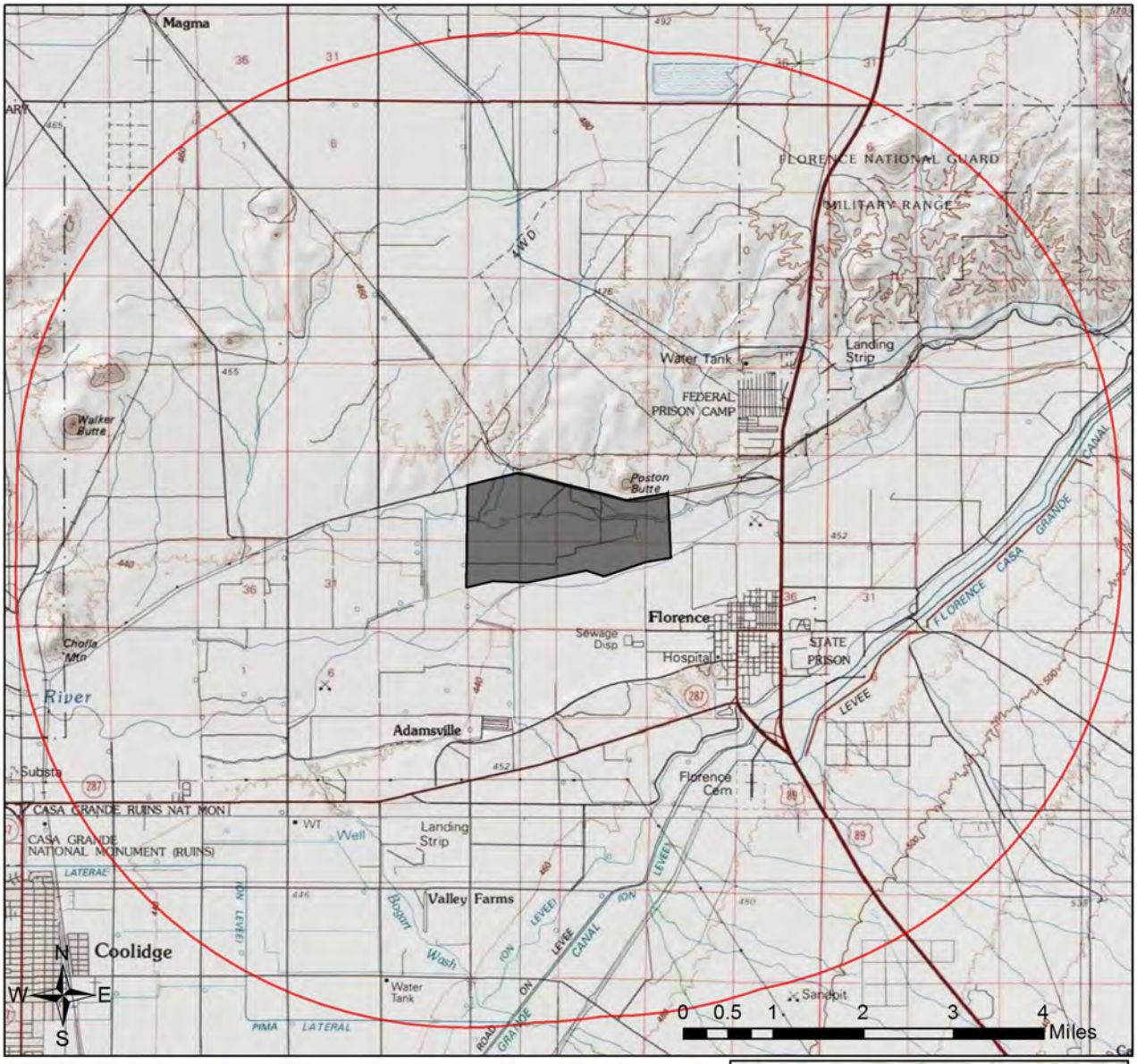
Locations Accuracy Disclaimer:
Project locations are assumed to be both precise and accurate for the purposes of environmental review. The creator/owner of the Project Review Report is solely responsible for the project location and thus the correctness of the Project Review Report content.

Recommendations Disclaimer:

1. The Department is interested in the conservation of all fish and wildlife resources, including those species listed in this report and those that may have not been documented within the project vicinity as well as other game and nongame wildlife.
2. Recommendations have been made by the Department, under authority of Arizona Revised Statutes Title 5 (Amusements and Sports), 17 (Game and Fish), and 28 (Transportation).
3. Potential impacts to fish and wildlife resources may be minimized or avoided by the recommendations generated from information submitted for your proposed project. These recommendations are preliminary in scope, designed to provide early considerations on all species of wildlife.
4. Making this information directly available does not substitute for the Department's review of project proposals, and should not decrease our opportunity to review and evaluate additional project information and/or new project proposals.
5. Further coordination with the Department requires the submittal of this Environmental Review Report with a cover letter and project plans or documentation that includes project narrative, acreage to be impacted, how construction or project activity(s) are to be accomplished, and project locality information (including site map). Once AGFD had received the information, please allow 30 days for completion of project reviews. Send requests to:
   Project Evaluation Program, Habitat Branch
   Arizona Game and Fish Department
   5000 West Carefree Highway
   Phoenix, Arizona 85086-5000
   Phone Number: (623) 236-7600
   Fax Number: (623) 236-7366
   Or
   PEP@azgfd.gov
6. Coordination may also be necessary under the National Environmental Policy Act (NEPA) and/or Endangered Species Act (ESA). Site specific recommendations may be proposed during further NEPA/ESA analysis or through coordination with affected agencies

Florence Cooper

USA Topo Basemap With Locator Map



☐ Project Boundary

☐ Buffered Project Boundary

Project Size (acres): 1,443.53

Lat/Long (DD): 33.0472 / -111.4217

County(s): Pinal

AGFD Region(s): Mesa

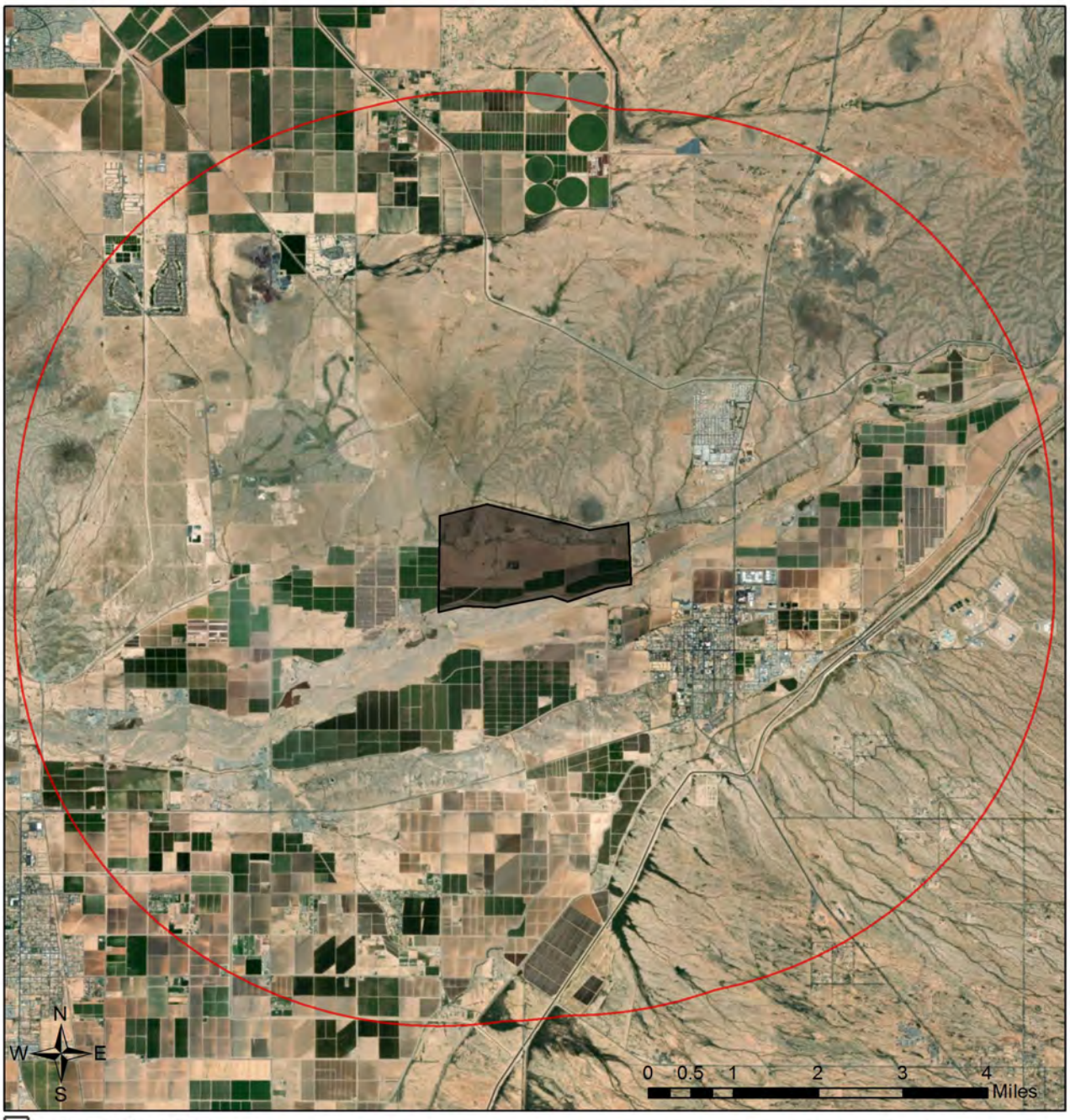
Township/Range(s): T4S, R9E

USGS Quad(s): FLORENCE

Service Layer Credits: Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap

Florence Cooper

Web Map As Submitted By User



Project Boundary

Buffered Project Boundary

Project Size (acres): 1,443.53

Lat/Long (DD): 33.0472 / -111.4217

County(s): Pinal

AGFD Region(s): Mesa

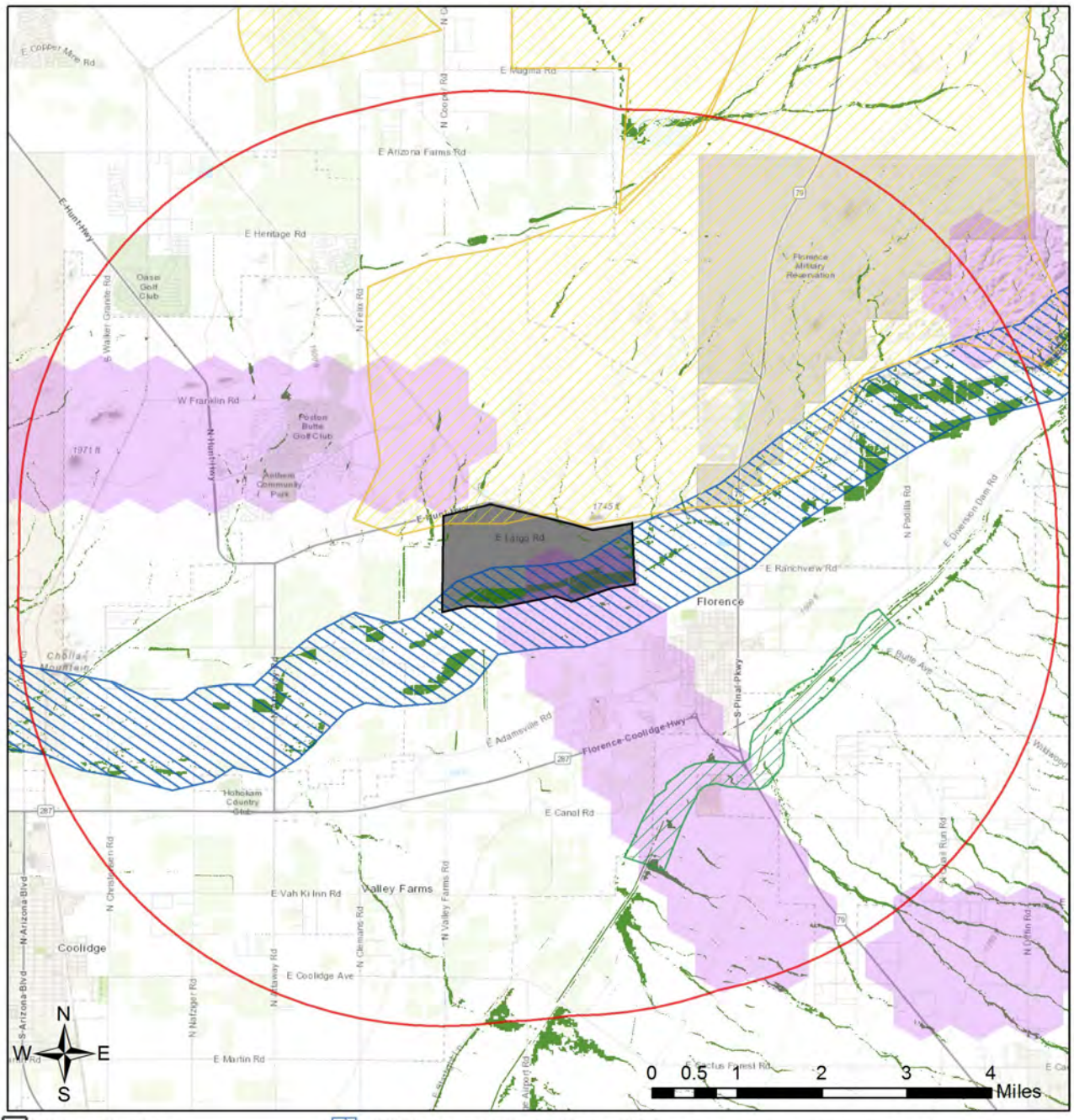
Township/Range(s): T4S, R9E

USGS Quad(s): FLORENCE

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Florence Cooper

Important Areas



Project Boundary
Buffered Project Boundary

County Stakeholder Assessment

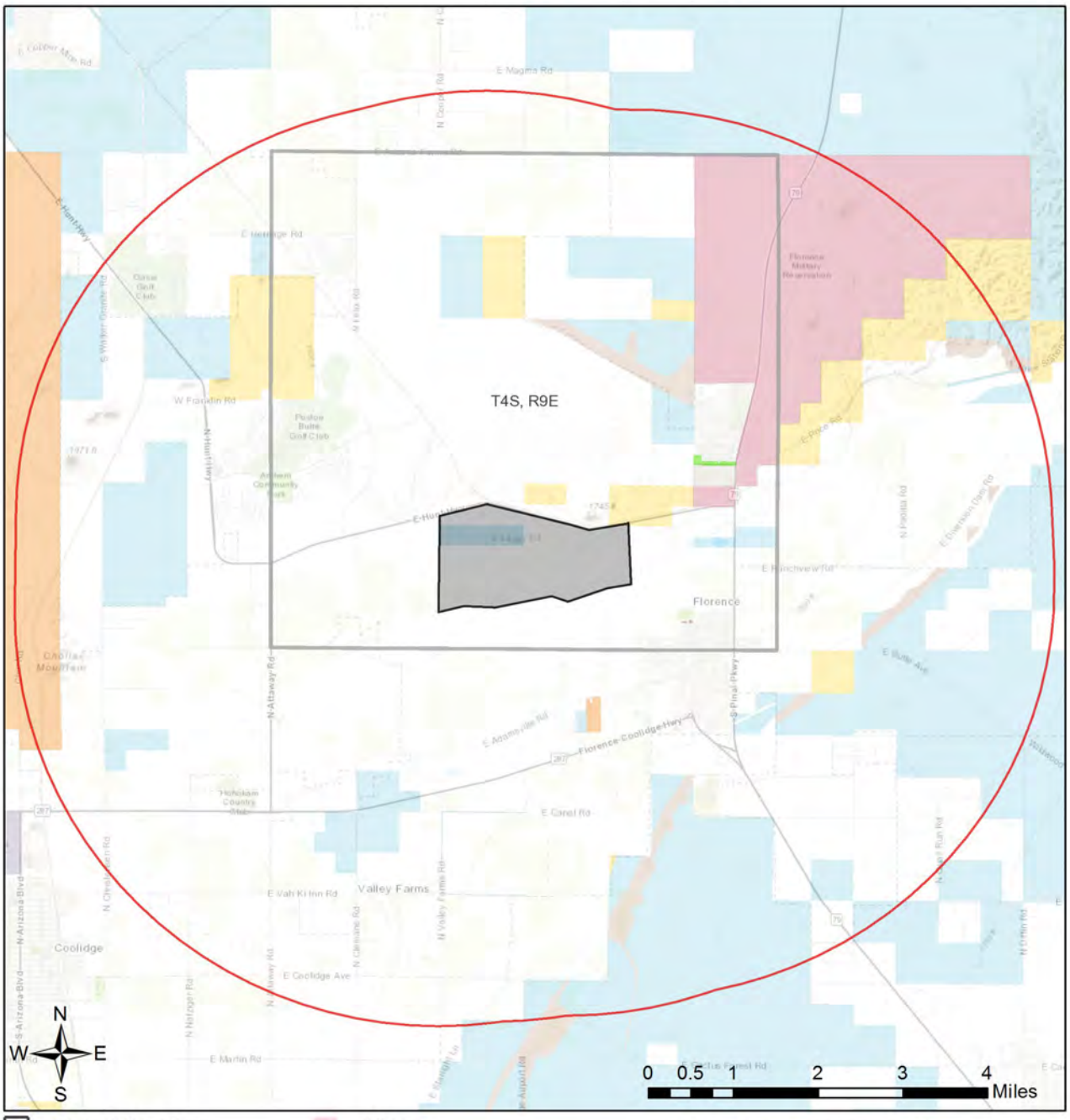
Wildlife Crossing Area
Wildlife Movement Area - Diffuse
Wildlife Movement Area - Landscape
Wildlife Movement Area - Riparian/Wash
Wildlife Connectivity
Important Connectivity Zones
Pinal County Riparian
Critical Habitat
Important Bird Areas

Project Size (acres): 1,443.53
Lat/Long (DD): 33.0472 / -111.4217
County(s): Pinal
AGFD Region(s): Mesa
Township/Range(s): T4S, R9E
USGS Quad(s): FLORENCE

Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

Florence Cooper

Township/Ranges and Land Ownership



- Project Boundary
- Buffered Project Boundary
- Township/Ranges

Land Ownership

- AZ Game & Fish Dept.
- BLM
- BOR
- Indian Res.
- Military
- Mixed/Other
- National Park/Mon.
- Private
- State & Regional Parks
- State Trust
- US Forest Service
- Wildlife Area/Refuge

Project Size (acres): 1,443.53
Lat/Long (DD): 33.0472 / -111.4217
County(s): Pinal
AGFD Region(s): Mesa
Township/Range(s): T4S, R9E
USGS Quad(s): FLORENCE

Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

Special Status Species Documented within 5 Miles of Project Vicinity

Scientific Name	Common Name	FWS	USFS	BLM	NPL	SGCN
Agosia chrysogaster chrysogaster	Gila Longfin Dace	SC		S		1B
Athene cunicularia hypugaea	Western Burrowing Owl	SC	S	S		1B
Catostomus clarkii	Desert Sucker	SC	S	S		1B
Catostomus insignis	Sonora Sucker	SC	S	S		1B
Chionactis occipitalis klauberi	Tucson Shovel-nosed Snake	SC				1A
Gopherus morafkai	Sonoran Desert Tortoise	CCA	S	S		1A
Phyllorhynchus browni	Saddled Leaf-nosed Snake					1B

Note: Status code definitions can be found at https://www.azgfd.com/wildlife/planning/wildlifeguidelines/statusdefinitions/
.

Special Areas Documented within the Project Vicinity

Scientific Name	Common Name	FWS	USFS	BLM	NPL	SGCN
Florence Military Reservation	Pinal County Wildlife Movement Area - Landscape					
Gila River	Pinal County Wildlife Movement Area - Riparian/Wash					
Important Connectivity Zone	Wildlife Connectivity					
Riparian Area	Riparian Area					

Note: Status code definitions can be found at https://www.azgfd.com/wildlife/planning/wildlifeguidelines/statusdefinitions/
.

Species of Greatest Conservation Need Predicted within the Project Vicinity based on Predicted Range Models

Scientific Name	Common Name	FWS	USFS	BLM	NPL	SGCN
Agosia chrysogaster	Longfin Dace	SC		S		1B
Aix sponsa	Wood Duck					1B
Ammospermophilus harrisii	Harris' Antelope Squirrel					1B
Aquila chrysaetos	Golden Eagle	BGA		S		1B
Athene cunicularia hypugaea	Western Burrowing Owl	SC	S	S		1B
Botaurus lentiginosus	American Bittern					1B
Buteo regalis	Ferruginous Hawk	SC		S		1B
Calypte costae	Costa's Hummingbird					1C
Catostomus clarkii	Desert Sucker	SC	S	S		1B
Catostomus insignis	Sonora Sucker	SC	S	S		1B
Chilomeniscus stramineus	Variable Sandsnake					1B
Chionactis occipitalis klauberi	Tucson Shovel-nosed Snake	SC				1A
Colaptes chrysoides	Gilded Flicker			S		1B
Coluber bilineatus	Sonoran Whipsnake					1B
Corynorhinus townsendii pallescens	Pale Townsend's Big-eared Bat	SC	S	S		1B
Crotalus tigris	Tiger Rattlesnake					1B

Species of Greatest Conservation Need Predicted within the Project Vicinity based on Predicted Range Models

Scientific Name	Common Name	FWS	USFS	BLM	NPL	SGCN
Cynanthus latirostris	Broad-billed Hummingbird		S			1B
Cyprinodon macularius	Desert Pupfish	LE				1A
Euderma maculatum	Spotted Bat	SC	S	S		1B
Eumops perotis californicus	Greater Western Bonneted Bat	SC		S		1B
Falco peregrinus anatum	American Peregrine Falcon	SC	S	S		1A
Gopherus morafkai	Sonoran Desert Tortoise	CCA	S	S		1A
Haliaeetus leucocephalus	Bald Eagle	SC, BGA	S	S		1A
Heloderma suspectum	Gila Monster					1A
Incilius alvarius	Sonoran Desert Toad					1B
Kinosternon sonoriense sonoriense	Desert Mud Turtle			S		1B
Lasiurus blossevillii	Western Red Bat		S			1B
Lasiurus xanthinus	Western Yellow Bat		S			1B
Leptonycteris yerbabuenae	Lesser Long-nosed Bat	SC				1A
Lepus alleni	Antelope Jackrabbit					1B
Macrotus californicus	California Leaf-nosed Bat	SC		S		1B
Melanerpes uropygialis	Gila Woodpecker					1B
Melospiza lincolnii	Lincoln's Sparrow					1B
Melozone aberti	Abert's Towhee		S			1B
Micrathene whitneyi	Elf Owl					1C
Micruroides euryxanthus	Sonoran Coralsnake					1B
Myiarchus tyrannulus	Brown-crested Flycatcher					1C
Myotis occultus	Arizona Myotis	SC		S		1B
Myotis velifer	Cave Myotis	SC		S		1B
Myotis yumanensis	Yuma Myotis	SC				1B
Nyctinomops femorosaccus	Pocketed Free-tailed Bat					1B
Oreoscoptes montanus	Sage Thrasher					1C
Oreothlypis luciae	Lucy's Warbler					1C
Panthera onca	Jaguar	LE				1A
Passerculus sandwichensis	Savannah Sparrow					1B
Phrynosoma solare	Regal Horned Lizard					1B
Phyllorhynchus browni	Saddled Leaf-nosed Snake					1B
Progne subis hesperia	Desert Purple Martin			S		1B
Setophaga petechia	Yellow Warbler					1B
Sphyrapicus nuchalis	Red-naped Sapsucker					1C
Spizella breweri	Brewer's Sparrow					1C
Sturnella magna	Eastern Meadowlark					1C
Tadarida brasiliensis	Brazilian Free-tailed Bat					1B
Toxostoma lecontei	LeConte's Thrasher			S		1B
Vireo bellii arizonae	Arizona Bell's Vireo					1B

Species of Greatest Conservation Need Predicted within the Project Vicinity based on Predicted Range Models

Scientific Name	Common Name	FWS	USFS	BLM	NPL	SGCN
Vulpes macrotis	Kit Fox	No Status				1B

Species of Economic and Recreation Importance Predicted within the Project Vicinity

Scientific Name	Common Name	FWS	USFS	BLM	NPL	SGCN
Callipepla gambelii	Gambel's Quail					
Pecari tajacu	Javelina					
Zenaida asiatica	White-winged Dove					
Zenaida macroura	Mourning Dove					

Project Type: Mining, Extraction Other minerals (copper, limestone, cinders, shale, salt), Other minerals (copper, limestone, cinders, shale, salt)

Project Type Recommendations:
Fence recommendations will be dependant upon the goals of the fence project and the wildlife species expected to be impacted by the project. General guidelines for ensuring wildlife-friendly fences include: barbless wire on the top and bottom with the maximum fence height 42", minimum height for bottom 16". Modifications to this design may be considered for fencing anticipated to be routinely encountered by elk, bighorn sheep or pronghorn (e.g., Pronghorn fencing would require 18" minimum height on the bottom). Please refer to the Department's Fencing Guidelines located on Wildlife Friendly Guidelines page, which is part of the WIldlife Planning button at https://www.azgfd.com/wildlife/planning/wildlifeguidelines/.

During the planning stages of your project, please consider the local or regional needs of wildlife in regards to movement, connectivity, and access to habitat needs. Loss of this permeability prevents wildlife from accessing resources, finding mates, reduces gene flow, prevents wildlife from re-colonizing areas where local extirpations may have occurred, and ultimately prevents wildlife from contributing to ecosystem functions, such as pollination, seed dispersal, control of prey numbers, and resistance to invasive species. In many cases, streams and washes provide natural movement corridors for wildlife and should be maintained in their natural state. Uplands also support a large diversity of species, and should be contained within important wildlife movement corridors. In addition, maintaining biodiversity and ecosystem functions can be facilitated through improving designs of structures, fences, roadways, and culverts to promote passage for a variety of wildlife. Guidelines for many of these can be found at: https://www.azgfd.com/wildlife/planning/wildlifeguidelines/.

Consider impacts of outdoor lighting on wildlife and develop measures or alternatives that can be taken to increase human safety while minimizing potential impacts to wildlife. Conduct wildlife surveys to determine species within project area, and evaluate proposed activities based on species biology and natural history to determine if artificial lighting may disrupt behavior patterns or habitat use. Use only the minimum amount of light needed for safety. Narrow spectrum bulbs should be used as often as possible to lower the range of species affected by lighting. All lighting should be shielded, canted, or cut to ensure that light reaches only areas needing illumination.

Minimize potential introduction or spread of exotic invasive species. Invasive species can be plants, animals (exotic snails), and other organisms (e.g., microbes), which may cause alteration to ecological functions or compete with or prey upon native species and can cause social impacts (e.g., livestock forage reduction, increase wildfire risk). The terms noxious weed or invasive plants are often used interchangeably. Precautions should be taken to wash all equipment utilized in the project activities before leaving the site. Arizona has noxious weed regulations (Arizona Revised Statutes, Rules R3-4-244 and R3-4-245). See Arizona Department of Agriculture website for restricted plants, https://agriculture.az.gov/. Additionally, the U.S. Department of Agriculture has information regarding pest and invasive plant control methods including: pesticide, herbicide, biological control agents, and mechanical control, http://www.usda.gov/wps/portal/usdahome. The Department regulates the importation, purchasing, and transportation of wildlife and fish (Restricted Live Wildlife), please refer to the hunting regulations for further information https://www.azgfd.com/hunting/regulations.

Minimization and mitigation of impacts to wildlife and fish species due to changes in water quality, quantity, chemistry, temperature, and alteration to flow regimes (timing, magnitude, duration, and frequency of floods) should be evaluated. Minimize impacts to springs, in-stream flow, and consider irrigation improvements to decrease water use. If dredging is a project component, consider timing of the project in order to minimize impacts to spawning fish and other aquatic species (include spawning seasons), and to reduce spread of exotic invasive species. We recommend early direct coordination with Project Evaluation Program for projects that could impact water resources, wetlands, streams, springs, and/or riparian habitats.

The Department recommends that wildlife surveys are conducted to determine if noise-sensitive species occur within the project area. Avoidance or minimization measures could include conducting project activities outside of breeding seasons.

Based on the project type entered, coordination with the Office of Surface Mining may be required (http://www.osmre.gov/index.shtm).

Based on the project type entered, coordination with the Environmental Protection Agency may be required (http://www.epa.gov/).

Based on the project type entered, coordination with State Historic Preservation Office may be required (http://azstateparks.com/SHPO/index.html).

Pre- and post-survey/monitoring should be conducted to determine alternative access/exits to mines and to identify and/or minimize potential impacts to bat species. For further information when developing alternatives to mine closures, contact the Arizona Game and Fish Department Nongame Bat Coordinator at the Main Office in Terrestrial Branch, https://www.azgfd.com/agency/offices or (602) 942-3000.

Based on the project type entered, coordination with Arizona Department of Environmental Quality may be required (http://www.azdeq.gov/).

Based on the project type entered, coordination with Arizona Department of Water Resources may be required (http://www.azwater.gov/azdwr/default.aspx).

Vegetation restoration projects (including treatments of invasive or exotic species) should have a completed site-evaluation plan (identifying environmental conditions necessary to re-establish native vegetation), a revegetation plan (species, density, method of establishment), a short and long-term monitoring plan, including adaptive management guidelines to address needs for replacement vegetation.

Avoid/minimize wildlife impacts related to contacting hazardous and other human-made substances in facility water collection/storage basins, evaporation or settling ponds and/or facility storage yards. Design slopes to discourage wading birds and use fencing, netting, hazing or other measures to exclude wildlife.

Project Location and/or Species Recommendations:
HDMS records indicate that one or more **Listed, Proposed, or Candidate** species or **Critical Habitat** (Designated or Proposed) have been documented in the vicinity of your project. The Endangered Species Act (ESA) gives the US Fish and Wildlife Service (USFWS) regulatory authority over all federally listed species. Please contact USFWS Ecological Services Offices at http://www.fws.gov/southwest/es/arizona/ or:

Phoenix Main Office
9828 North 31st Avenue #C3
Phoenix, AZ 85051-2517
Phone: 602-242-0210
Fax: 602-242-2513

Tucson Sub-Office
201 N. Bonita Suite 141
Tucson, AZ 85745
Phone: 520-670-6144
Fax: 520-670-6155

Flagstaff Sub-Office
SW Forest Science Complex
2500 S. Pine Knoll Dr.
Flagstaff, AZ 86001
Phone: 928-556-2157
Fax: 928-556-2121

HDMS records indicate that **Western Burrowing Owls** have been documented within the vicinity of your project area. Please review the western burrowing owl resource page at: https://www.azgfd.com/wildlife/speciesofgreatestconservneed/burrowingowlmanagement/.

HDMS records indicate that **Sonoran Desert Tortoise** have been documented within the vicinity of your project area. Please review the Tortoise Handling Guidelines found at: https://www.azgfd.com/wildlife/nongamemanagement/tortoise/

This review has identified **riparian areas** within the vicinity of your project. During the planning stage of your project, avoid, minimize, or mitigate any potential impacts to riparian areas identified in this report. Riparian areas play an important role in maintaining the functional integrity of the landscape, primarily by acting as natural drainages that convey water through an area, thereby reducing flood events. In addition, riparian areas provide important movement corridors and habitat for fish and wildlife. Riparian areas are channels that contain water year-round or at least part of the year. Riparian areas also include those channels which are dry most of the year, but may contain or convey water following rain events. All types of riparian areas offer vital habitats, resources, and movement corridors for wildlife. The Pinal County Comprehensive Plan (i.e. policies *6.1.2.1* and *7.1.2.4*), Open Space and Trails Master Plan, Drainage Ordinance, and Drainage Design Manual all identify riparian area considerations, guidance, and policies. Guidelines to avoid, minimize, or mitigate impacts to riparian habitat can be found at https://www.azgfd.com/wildlife/planning/wildlifeguidelines/. Based on the project type entered, further consultation with the Arizona Game and Fish Department and Pinal County may be warranted.

Analysis indicates that your project is located in the vicinity of an identified ***wildlife habitat connectivity feature***. The **County-level Stakeholder Assessments** contain five categories of data (Barrier/Development, Wildlife Crossing Area, Wildlife Movement Area- Diffuse, Wildlife movement Area- Landscape, Wildlife Movement Area- Riparian/Washes) that provide a context of select anthropogenic barriers, and potential connectivity. The reports provide recommendations for opportunities to preserve or enhance permeability. Project planning and implementation efforts should focus on maintaining and improving opportunities for wildlife permeability. For information pertaining to the linkage assessment and wildlife species that may be affected, please refer to: https://www.azgfd.com/wildlife/planning/habitatconnectivity/identifying-corridors/.
Please contact the Project Evaluation Program (pep@azgfd.gov) for specific project recommendations.

Analysis indicates that your project is located in the vicinity of an identified ***wildlife habitat connectivity feature***.
The **Statewide Wildlife Connectivity Assessment's Important Connectivity Zones** (ICZs) represent general areas throughout the landscape which contribute the most to permeability of the whole landscape. ICZs may be used to help identify, in part, areas where more discrete corridor modeling ought to occur. The reports provide recommendations for opportunities to preserve or enhance permeability. Project planning and implementation efforts should focus on maintaining and improving opportunities for wildlife permeability. For information pertaining to the linkage assessment and wildlife species that may be affected, please refer to: https://s3.amazonaws.com/azgfd-portal-wordpress/azgfd.wp/wp-content/uploads/0001/01/23120719/ALIWCA_Final_Report_Perkl_2013_lowres.pdf.
Please contact the Project Evaluation Program (pep@azgfd.gov) for specific project recommendations.

APPENDIX C

Representative Photographs

Photo 1.
View near center of vegetated portion of Project Area looking west: typical vegetation dominated by creosotebush surrounding old disturbance.

Photo 2.
View at northcentral edge of Project Area looking east: typical vegetation dominated by creosotebush.

Photo 3.
View in east-central vegetated portion of Project Area looking south: fenced area previously disturbed with vegetation typical of disturbed areas.

Photo 4.
View in central portion of Project Area looking south: North Side Canal in foreground, agricultural field portion of the Project Area on other side of canal.

Photo 5.
View in west-central part of vegetated portion of Project Area: typical vegetation dominated by creosotebush.

Photo 6.
View of small vegetation patch on south side of North Side Canal in west-central portion of Project Area: cleared area and vegetation typical of disturbance, with mesquite and palo verde along the canal.

Photo 7.
View in west-central part of vegetated portion of Project Area: xeroriparian area with blue palo verde and dense patches of forbs.

Photo 8.
View at west end of vegetated portion of Project Area: xeroriparian area with velvet mesquite, higher density of creosotebush than elsewhere in the Project Area, and dense forbs.

APPENDIX D

Wildlife Monitoring Plan

APPENDIX H – Wildlife Monitoring Plan

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CURIS RESOURCES (ARIZONA) INC.

March 17, 2011

Florence Copper Project
Wildlife Monitoring Plan

Curis Resources (Arizona) Inc. (Curis Arizona) recognizes the importance of protecting threatened and endangered species, and area wildlife. As such, Curis Arizona has prepared this Wildlife Monitoring Plan to manage wildlife that may occur near to or on the Florence Copper Project (FCP) site. The Wildlife Monitoring Plan has three components.

Prevention of Access

Wildlife access to the FCP site will be prevented by installing two sets of fencing. A wildlife-friendly boundary fence will be constructed around the operating area, with access gates that will allow site personnel to enter, but prevent entry by area wildlife. A second fence will be installed inside this boundary fence and surrounding the impoundments. It will be constructed of interlocking wire that will be buried 12 inches below ground surface to prevent access by burrowing animals, such as the Sonoran desert tortoise, which has been sighted within three miles of the FCP site. The construction and planned depth below surface of the impoundment fencing will meet criteria as described in the Arizona Interagency Desert Tortoise Team's *Recommended Standard Mitigation Measures for Projects in Sonoran Desert Tortoise Habitat* (June, 2008).

Tortoise Handling Plan

In 2007, Arizona Game and Fish Department issued *Guidelines for Handling Sonoran Desert Tortoises Encountered on Development Projects* (as attached). Curis Arizona's tortoise handling plan will follow these 2007 guidelines. Contractors and employees will be given initial and periodic instruction on the procedure to be used if a tortoise is encountered. Only trained site personnel will be allowed to interact with a tortoise.

Migratory Bird Observation Plan

There is sufficient non-process water in the area, such as canals and irrigation water, to attract birds, and Curis Arizona knows of no bird mortality on impoundments like the ones designed for the FCP. Site personnel will nevertheless be trained to conduct daily inspections of the impoundments and will record any bird landings or bird mortality. Any landings will be recorded in a daily log and reported in quarterly monitoring reports to USEPA. Any mortality will be reported immediately to Arizona Game and Fish Department and USEPA. Arizona Game and Fish Department will instruct the operators as to the action required to remove a bird from an impoundment. Bird mortality will also be reported to USEPA as part of the quarterly monitoring reports. If bird mortality occurs regularly, Curis Arizona will develop a more comprehensive migratory bird management plan in conjunction with USEPA.

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GUIDELINES FOR HANDLING SONORAN DESERT TORTOISES ENCOUNTERED ON DEVELOPMENT PROJECTS

Arizona Game and Fish Department
Revised October 23, 2007

The Arizona Game and Fish Department (Department) has developed the following guidelines to reduce potential impacts to desert tortoises, and to promote the continued existence of tortoises throughout the state. These guidelines apply to short-term and/or small-scale projects, depending on the number of affected tortoises and specific type of project.

The Sonoran population of desert tortoises occurs south and east of the Colorado River. Tortoises encountered in the open should be moved out of harm's way to adjacent appropriate habitat. If an occupied burrow is determined to be in jeopardy of destruction, the tortoise should be relocated to the nearest appropriate alternate burrow or other appropriate shelter, as determined by a qualified biologist. Tortoises should be moved less than 48 hours in advance of the habitat disturbance so they do not return to the area in the interim. Tortoises should be moved quickly, kept in an upright position parallel to the ground at all times, and placed in the shade. Separate disposable gloves should be worn for each tortoise handled to avoid potential transfer of disease between tortoises. Tortoises must not be moved if the ambient air temperature exceeds 40° Celsius (105° Fahrenheit) unless an alternate burrow is available or the tortoise is in imminent danger.

A tortoise may be moved up to one-half mile, but no further than necessary from its original location. If a release site, or alternate burrow, is unavailable within this distance, and ambient air temperature exceeds 40° Celsius (105° Fahrenheit), the Department should be contacted to place the tortoise into a Department-regulated desert tortoise adoption program. Tortoises salvaged from projects which result in substantial permanent habitat loss (e.g. housing and highway projects), or those requiring removal during long-term (longer than one week) construction projects, will also be placed in desert tortoise adoption programs. *Managers of projects likely to affect desert tortoises should obtain a scientific collecting permit from the Department to facilitate temporary possession of tortoises.* Likewise, if large numbers of tortoises (>5) are expected to be displaced by a project, the project manager should contact the Department for guidance and/or assistance.

Please keep in mind the following points:

- These guidelines do not apply to the Mojave population of desert tortoises (north and west of the Colorado River). Mojave desert tortoises are specifically protected under the Endangered Species Act, as administered by the U.S. Fish and Wildlife Service.

- These guidelines are subject to revision at the discretion of the Department. We recommend that the Department be contacted during the planning stages of any project that may affect desert tortoises.

- Take, possession, or harassment of wild desert tortoises is prohibited by state law. Unless specifically authorized by the Department, or as noted above, project personnel should avoid disturbing any tortoise.

GUIDELINES FOR HANDLING SONORAN DESERT TORTOISES ENCOUNTERED ON DEVELOPMENT PROJECTS

Arizona Game and Fish Department
Revised September 22, 2014

The Arizona Game and Fish Department (Department) has developed the following guidelines to reduce potential impacts to desert tortoises, and to promote the continued existence of tortoises throughout the state. These guidelines apply to short-term and/or small-scale projects, depending on the number of affected tortoises and specific type of project.

The Sonoran desert tortoise occurs south and east of the Colorado River. Tortoises encountered in the open should be moved out of harm's way to adjacent appropriate habitat. If an occupied burrow is determined to be in jeopardy of destruction, the tortoise should be relocated to the nearest appropriate alternate burrow or other appropriate shelter, as determined by a qualified biologist. Tortoises should be moved less than 48 hours in advance of the habitat disturbance so they do not return to the area in the interim. Tortoises should be moved quickly, kept in an upright position parallel to the ground at all times, and placed in the shade. Separate disposable gloves should be worn for each tortoise handled to avoid potential transfer of disease between tortoises. Tortoises must not be moved if the ambient air temperature exceeds 40° Celsius (105° Fahrenheit) unless an alternate burrow is available or the tortoise is in imminent danger.

A tortoise may be moved up to one-half mile, but no further than necessary from its original location. If a release site or alternate burrow is unavailable within this distance, and ambient air temperature exceeds 40° Celsius (105° Fahrenheit), contact the Department for guidance. Tortoises salvaged from projects which result in substantial permanent habitat loss (e.g. housing and highway projects), or those requiring removal during long-term (longer than one week) construction projects, may be placed in the Department's tortoise adoption program. *Managers of projects likely to affect desert tortoises should obtain a scientific collecting license from the Department to facilitate handling or temporary possession of tortoises.* Likewise, if large numbers of tortoises (>5) are expected to be displaced by a project, the project manager should contact the Department for guidance and/or assistance.

Please keep in mind the following points:

- Use the Department's Environmental On-Line Review Tool Department during the planning stages of any project that may affect desert tortoise habitat.

- Unless specifically authorized by the Department, or as noted above, project personnel should avoid disturbing any tortoise.

- Take is prohibited by state law.

- These guidelines do not apply to Mojave desert tortoises (north and west of the Colorado River). Mojave desert tortoises are listed as threatened under the Endangered Species Act, administered by the U.S. Fish and Wildlife Service.

- These guidelines are subject to revision at the discretion of the Department.